I CLAIM:

1. A distributed network organization method for self-organizing a group of nodes into a communication network where the nodes are all operatively connected to a shared communication medium, said method comprising

placing the nodes, for up to a selected time interval, in a condition of listening over the medium for the occurrence of a message indicating the presence of a central coordinator (CCo) node, and

at a point in time following the conclusion of that interval, if there has been no such message occurrence, and under the collective action the node group, creating a network topology understanding which results in the activity of selection, from the group, of a CCo, and the production of a network organization utilizing such topology understanding.

2. The method of claim 1, wherein said organization production includes the recognition of hidden nodes, and the naming of intermediary proxy nodes which enable the mentioned effective bi-directional communication between each hidden node and other nodes.

3. The method of claim 1, wherein said creating of a network topology includes the per-node, individual creation of a discovered nodes list that describes direct internodal communication capabilities, and such selection activity is performed, at least partially, on the basis of the contents of such lists.

4. A distributed network method for self-organizing a group of nodes into a communication network where the nodes are all operatively connected to a shared communication medium and there is no central coordinator node, said method comprising

engaging in the process of determining direct internodal communication capabilities, and

as a consequence of said engaging, electing a best-suited central coordinator node for a network.

5. The method of claim 4 which further comprises, following electing of a central coordinator node, identifying hidden nodes, and choosing intermediary proxy nodes to enable all-node internodal communication capability through such proxy nodes with the hidden nodes.

6. A method for organizing, from a group of nodes, a communication network based upon the assumption that the organized network will, initially, lack a central coordinator, said method comprising

determining which nodes in the group are optimally capable of becoming organized into a desired network,

enabling the so-determined nodes effectively each to learn (a) the identities of other nodes in the group which have also been so determined, and (b), with respect to all of these so-determined nodes, the respective qualities of communication links that directly exist between pairs of the nodes, and

on the basis of such learning, creating a discovered topology table which provides a guiding tool for the current definition and formation of the desired network.

7. A method for organizing, from a group of nodes, a communication network based upon the assumption that the organized network will, initially, lack a central coordinator, and in a setting wherein each node in the group has topology knowledge regarding (a) the identities of all other nodes in the group, and (b) the respective qualities of communication links that directly exist between different ones of these nodes, said method comprising

performing an analysis of such topology knowledge to identify the most appropriate candidate node to perform, in at least the immediate future, the role of a central coordinator node, and

following said performing, collectively engaging plural nodes in the group in the selection of that candidate node to be the then-designated central coordinator node.

8. The method of claim 7, wherein the activity involving selection includes a Maximum Coverage criterion which is applied to determine the node in the network which supports bi-directional links with the maximum number of nodes.

9. The method of claim 7, wherein the activity involving selection includes a Maximum Capacity criterion which is a applied to determine the node in the network which exhibits the most desirable throughput characteristics.

10. The method of claim 7, wherein the activity involving selection includes a Device Class criterion which is applied to determine which node in the network possesses the highest class among the nodes.

11. The method of claim 7, wherein the activity involving selection includes a Lowest Duty Cycle criterion which is applied to determine the node in the network which is characterized with having the highest percentage of time devoteable to attending to network control functions.

12. The method of claim 7, wherein the activity involving selection includes a combination of plural criteria selected from the list including (a) Maximum Coverage, (b) Maximum Capacity, (c) Device Class, and (d) Lowest Duty Cycle.

13. The method of claim 7, wherein the activity involving selection includes a Tie Breaker criterion which is applied when applications of criteria to determine the best node to be the CCo produce a tie among nodes.

14. The method of claim 7, where the activity involving selection includes, for use in lieu of use a Tie Breaker criterion as described in claim 13, an Order for Selection criterion as illustrated in Fig. 11 herein.

15. A distributed network method for self-organizing a group of nodes into a communication network, where the nodes are all operatively connected to a shared communication medium, certain nodes may be hidden nodes, and there is an initial assumption that there is no central coordinator node, said method comprising

engaging in a discovery process to identify the qualities of direct and indirect internodal communication capabilities, and

as a consequence of said engaging, establishing, as desired, at least one proxy node to facilitate bi-directional communication with any hidden nodes.

16. The method of claim 15, wherein the following algorithm is employed in the establishment of a proxy node:

1. Let S_{PCo} represent the set of Proxy Coordinator nodes.

2. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, *and* $k \notin N$, if there exists a node $j \in N$, and $j \in S_{PCo}$, and $j <=> k$, then j is the PCo for node k.

3. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, *and* $k \notin N$, if there exists a node $j \in N$, and $j \notin S_{PCo}$, and $j <=> k$, then j is designated the PCo for node k and added to the set of PCos, S_{PCo}.

4. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, *and* $k \notin N$, if there DOES NOT exist a node $j \in N$, and $j <=> k$, then the hidden node k cannot be reached by any node in the network N and therefore has no PCo.